REMARKS

Claims 1-15 are pending, with claim 1 being independent. Claim 1 has been amended. Support for the amendment can be found in the originally-filed specification, at least at page 3, lines 26-28. No new matter has been introduced.

Allowable Claims

Applicants thank the Examiner for indicating that claims 2-4 and 6 recite allowable subject matter.

Telephone Interview

The undersigned thanks the Examiner for the telephone interviews granted on July 17 and 18, 2007. During the interviews, the undersigned presented the Examiner with a proposed amendment to claim 1 and the proposed amendment is presented in this Reply. The undersigned pointed out that Ireland's diffraction grating 96 is not a surface for diffusively scattering and spatially homogenizing light. The Examiner agreed and indicated that this amendment would overcome the current rejections.

Claim Rejections – 35 U.S.C. §103

Claims 1, 5, 7, and 11-15 have been rejected as allegedly being unpatentable over WO/93/23899 (Tidwell) in view of U.S. Patent No. 5,048,044 (Ireland). Applicants request withdrawal of this rejection because Tidwell fails to describe or suggest a reflector surrounding a laser-active solid body at a distance from the lateral surface of the solid body for reflecting light that exits the solid body back towards the solid body to thereby form an annular gap between the solid body and the reflector, as recited in claim 1, and because one of ordinary skill in the art would not have been motivated to modify Tidwell in the manner suggested.

Tidwell relates to a laser system 2 having a solid state lasing medium 4 that receives pump radiation from a pump source 10 through an end surface 6 of the medium 4. See Tidwell at page 4, lines 11-19, and Fig. 1. The solid state lasing medium 4 has a circumferential side

surface 8 that reflects the pump radiation by total internal reflection. See Tidwell at page 4, lines 11-27 and Fig. 1. A reflecting coating can be applied to the side surface 8 to support this reflection. See Tidwell at page 4, lines 28 -35 and Fig. 1. The reflective coating can be specular or diffusive and the side surface 8 can be treated to provide a rough surface to reflect radiation. See Tidwell at page 5, lines 1-14. However, while light can pass through Tidwell's side surface 8, there is no suggestion that the coating surrounding Tidwell's side surface 8 is at a distance from the side surface 8 to form an annular gap between the side surface 8 and the coating. Rather, as Tidwell explains, the "reflective coating is applied to the side surface 8." See Tidwell at page 5, line 1.

In view of the deficiency in Tidwell, the Office cites Ireland and argues that "Ireland teaches a pumped solid state medium wherein a diffusive reflective surface is spaced from the solid state body (fig. 13) forming a gap" such that it "would have been obvious ... to combine the diffusive reflective surface of Tidwell with the spaced apart diffusive reflective surface of Ireland in order to form a gap to allow for insertion of a cooling medium," as supposedly suggested at col. 6, lines 56-60 of Ireland. Applicants respectfully disagree for the following reasons.

First, Ireland does not describe or suggest a "a surface for diffusively scattering and spatially homogenizing light" that is spaced from a solid body. In particular, although a reflective diffraction grating 96 is spaced from a laser member 90, the diffraction grating 96 is not a surface for diffusively scattering light and spatially homogenizing light, as recited in claim 1. Rather, as Ireland explains, the diffraction grating 96 has a "regular profile having a period s" that will provide for constructive interference of light reflected from the diffraction grating 96. See Ireland at col. 6, line 64 to col. 7, line 51 and Fig. 14.

Second, one of ordinary skill would not have been motivated to modify Tidwell with the diffraction grating design of Ireland because any such modification would render inoperable Tidwell's laser system 2, which requires that pump radiation be input into the lasing medium 4 through the end surface 6. In Ireland, by contrast, the pumping light enters the side surface 94 of the laser member 90 such that the light is in a "direction normal to the optical axis." See Ireland at col. 7, lines 38-51.

Third, any modification of Tidwell's laser system 2 to include a reflective diffraction grating spaced from the side surface 8 would change the principle of operation of Tidwell, which explains that the reflective coating is diffusive (not diffractive) to provide for a greater number of path lengths of the pumping radiation that is reflected back and forth within the lasing medium 4. See Tidwell at page 5, lines 1-6. Even if one were to somehow place the reflective diffraction grating of Ireland at a distance from Tidwell's lasing medium 4 to form a gap between the reflective diffraction grating and the lasing medium 4, such a placement would not provide for a greater number of path lengths.

Fourth, Ireland teaches away from such a modification of Tidwell at col. 7, lines 51-61. As Ireland explains in this passage, in the only design in which the pumping light travels in a direction having a substantial component along the optical axis, "no special arrangement is needed for reflecting the pumping light after the initial pass" because the pumping light "will undergo total internal reflection at the end of the initial pass" in such a design. The "special arrangement" to which Ireland refers is arranging the reflective diffraction grating 96 at a distance from the laser member 90. Moreover, even though Ireland mentions in this passage that pumping light can have a substantial component along an optical axis, Ireland never suggests that such pumping light would enter the laser member 90 at an end surface, as in Tidwell's laser system 2. Rather, Ireland explains that to obtain a substantial component along the optical axis, an optical device is positioned between the laser diodes and the (lateral surface 94) of the laser member 90. See Ireland at col. 7, lines 51-57.

For at least these reasons, claim 1 is allowable over Tidwell and Ireland. Claims 5, 7, and 11-15 depend from claim 1, and are allowable for at least the same reasons that claim 1 is allowable.

Claims 8-10 have been rejected as allegedly being unpatentable over Tidwell in view of Ireland and U.S. Publication No. 2002/0118718 (Honea). Claims 8-10 depend from claim 1, which was rejected as being obvious over Tidwell in view of Ireland. As discussed above, Tidwell fails to describe or suggest a reflector surrounding a laser-active solid body at a distance from the lateral surface of the solid body for reflecting light that exits the solid body back towards the solid body to thereby form an annular gap between the solid body and the reflector, as recited in claim 1. While Honea may describe the use of a high refractive index medium, it

does not remedy the failure of Tidwell to describe or suggest this subject matter. In Honea, the multi-layer coating around a side of a laser slab 22 is not located at a distance from the side of the laser slab 22 in such a manner as to form an annular gap between the laser slab 22 and the multi-layer coating. Rather, the multi-layer coating is applied directly to one or more sides of the laser slab. See Honea at paragraph 0027 and Fig. 5. Accordingly, claim 1 is allowable over any possible combination of Tidwell, Ireland, and Honea, and claims 8-10 are allowable for at least the reasons that claim 1 are allowable.

Conclusion

Applicant submits that all claims are in condition for allowance. Please apply any charges or credits to deposit account 06-1050.

Respectfully submitted,

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